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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,229	08/20/2001	Blue John Ramsey	78104.025	9574

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EXAMINER

WONG, EDNA

ART UNIT	PAPER NUMBER
1741	7

DATE MAILED: 10/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 09/857,229		Applicant(s) RAMSEY ET AL.	
Examiner Edna Wong		Art Unit 1741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 19-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 19-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> . | 6) <input type="checkbox"/> Other: _____ |

Specification

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Rejections - 35 USC § 112

Claims **28** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28

line 2, the alternative expression of the Markush group is improper. MPEP 2173.05(h). The word "and" should amended to the word -- or --.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Products

I. Claims **31-33** are rejected under 35 U.S.C. 102(b) as being anticipated by **Chen et al.** (US Patent No. 5,989,653).

Chen teaches an electrical assembly comprising a substrate **1** having at least

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one electrically conducting layer **4**, an interconnect and a battery comprising:

(a) an ink seeding layer **3**; and

(b) a first electrically conducting layer on the seeding layer **4** (col. 3, lines 18-22;

and Fig. 1e).

The invention defined in a product by process claim is a product, not a process.

In re Bridgeford 679, 149 USPQ 55 (CCPA 1966).

It is the patentability of the product claimed and NOT of the recited process steps which must be established. *In re Brown* 459 F. 2d 531, 173 USPQ 685 (CCPA 1972); *In re Wertheim* 541 F. 2d 257, 191 USPQ 90 (CCPA 1976).

When the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claim in a product-by-process claim, the burden is on the Applicants to present evidence from which the Examiner could reasonably conclude that the claimed product differs in kind from those of the prior art. *In re Brown* 459 F. 2d 531, 173 USPQ 685 (CCPA 1972); *In re Fessman* 489 F. 2d 742, 180 USPQ 685 (CCPA 1972) and MPEP § 2113.

II. Claims **31-33** are rejected under 35 U.S.C. 102(b) as being anticipated by **Kenney** (US Patent No. 3,949,121).

Kenney teaches an electrical assembly comprising a substrate **70** having at least one electrically conducting layer **79**, an interconnect and a battery comprising:

(a) an ink seeding layer **78**; and

(b) a first electrically conducting layer on the seeding layer **79** (col. 7, lines 25 to 63; and Figs. 3 and 4).

The invention defined in a product by process claim is a product, not a process. *In re Bridgeford* 679, 149 USPQ 55 (CCPA 1966).

It is the patentability of the product claimed and NOT of the recited process steps which must be established. *In re Brown* 459 F. 2d 531, 173 USPQ 685 (CCPA 1972); *In re Wertheim* 541 F. 2d 257, 191 USPQ 90 (CCPA 1976).

When the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claim in a product-by-process claim, the burden is on the Applicants to present evidence from which the Examiner could reasonably conclude that the claimed product differs in kind from those of the prior art. *In re Brown* 459 F. 2d 531, 173 USPQ 685 (CCPA 1972); *In re Fessman* 489 F. 2d 742, 180 USPQ 685 (CCPA 1972) and MPEP § 2113.

Composition

III. Claims **34 and 35** are rejected under 35 U.S.C. 102(b) as being anticipated by **Seeger, Jr. et al.** (US Patent No. 4,759,970).

Seeger teaches a lithographic ink comprising a particulate material (= electrically conductive metal particles) [col. 5, lines 56-62; and col. 6, lines 22-67] suspended in a

mixture of a resin (col. 5, line 63 to col. 6, line 5) and an organic solvent (col. 6, lines 7-21).

The particulate material is metal (col. 6, lines 27-38).

Process

IV. Claims **1-2, 20, 22-23 and 28** are rejected under 35 U.S.C. 102(b) as being anticipated by **Chen et al.** (US Patent No. 5, 989,653).

Chen teaches a process for forming a conductive layer **4** on a substrate **1** comprising the steps of:

(a) depositing ink on the substrate **1** by means of lithographic printing (col. 2, lines 15-18; and col. 5, lines 10-20) to form a seeding layer **2** (col. 2, lines 61-64; and Figs. 1a and 1b); and

(b) depositing a first electrolytically conducting layer **4** on the seeding layer by electroless deposition (col. 3, lines 18-22; col. 5, lines 21-62; and Fig. 1e).

A second electrically conductive layer **5** is electroplated onto the first electrically conducting layer (col. 3, lines 18-22; col. 5, line 63 to col. 6, line 15; and Fig. 1f).

The substrate **1** is formed from a polymer into a flexible sheet (col. 3, lines 23-35).

The ink comprises a particulate material (= catalyst ions) suspended in a mixture of a resin (= a polymer carrier) and an organic solvent (col. 3, line 36 to col. 4, line 35).

The particulate material is a metal (col. 3, lines 36-51).

The first electrically conducting layer is formed from copper (col. 5, lines 21-62).

V. Claims **1-2, 20, 22-23 and 28** are rejected under 35 U.S.C. 102(b) as being anticipated by **Kenney** (US Patent No. 3,949,121).

Kenney teaches a process for forming a conductive layer **79** on a substrate **70** comprising the steps of:

(a) depositing ink on the substrate **70** by means of lithographic printing (col. 6, lines 18-35; col. 7, lines 1-63; and Figs. 2 and 3) to form a seeding layer **78** (= conductive ink pattern) [col. 7, lines 18-24 and lines 40-49; and Figs. 2 and 3]; and

(b) depositing a first electrolytically conducting layer **79** on the seeding layer by electroless deposition (col. 7, lines 50-63; and Fig. 4).

A second electrically conductive layer is electroplated onto the first electrically conducting layer (col. 9, lines 3-13; col. 12, claim 3; and Fig. 5).

The substrate **70** is formed from a polymer into a flexible sheet (col. 3, lines 40-51; and col. 5, lines 22-23).

The ink comprises a particulate material (= powdered metals) suspended in a mixture of a resin (= a binder) and an organic solvent (col. 7, lines 1-17).

The particulate material is a metal or carbon (= graphite) [col. 7, lines 1-17; and col. 12, Example XIV].

The first electrically conducting layer is formed from copper (col. 7, lines 18-24).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims **21 and 24-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chen et al.** (US Patent No. 5,989,653) as applied to claims 1-2, 20, 22-23 and 28 above, and further in view of **Seeger, Jr. et al.** (US Patent No. 4,579,970).

Chen is as applied above and incorporated herein.

Chen does not teach wherein the substrate is coated with a polymer adhesive; wherein the resin is a polymer having amide groups; wherein the thickness of the seeding layer is from 3 to 5 microns; wherein the thickness of the first electrically conducting layer is less than or equal to 4 microns; and wherein the thickness of the first electrically conducting layer is about 0.25 microns.

However, Seeger teaches that a thermosetting adhesive aids in bonding the ink to the organic resin or plastic substrate (col. 2, lines 19-28; col. 5, lines 10-44; and Fig. 4).

Thus, the invention as a whole would have been obvious to one having ordinary

skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Chen with wherein the substrate is coated with a polymer adhesive because this would have aided in bonding the ink to the organic resin or plastic substrate as taught by Seeger (col. 2, lines 19-28; col. 5, lines 10-44; and Fig. 4).

As to wherein the resin is a polymer having amide groups, Chen teaches that the catalyst solution comprises a suitable polymer carrier (including monomers and oligomers) [col. 3, line 36 to col. 4, line 35]. It appears that a polyamide would have been suitable as the polymer carrier because polyamides are known binders in particle-filled printing inks as taught by Seeger, Jr. (col. 5, lines 56-70). It has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See MPEP § 2144.06 and § 2144.07.

Furthermore, the resin is a result-effective variable and one skilled in the art has the skill to determine the resin that would carry out the desired reaction, i.e., the polymer carrier should be identical to, or similar to, or compatible with the substrate upon solidification so that good adhesion is created between the substrate and the solid matrix of the polymer carrier, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to wherein the thickness of the seeding layer is from 3 to 5 microns; wherein

the thickness of the first electrically conducting layer is less than or equal to 4 microns; and wherein the thickness of the first electrically conducting layer is about 0.25 microns, the seeding layer **2** and the first electrically conducting layer **4** of Chen would have inherently had a thickness. Although not specifically disclosed by Chen, it would have been well within the skill of the artisan to have determined the thickness of these layers because the thickness is a result-effective variable and one skilled in the art has the skill to calculate the thickness that would determine the success of the desired reaction to occur, i.e., carrying the electric current, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

II. Claims **19, 29 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chen et al.** (US Patent No. 5, 989,653) as applied to claims 1-2, 20, 22-23 and 28 above, and further in view of **Brandt et al.** (US Patent No. 5,922,397).

Chen is as applied above and incorporated herein.

Chen does not teach attaching an electrical component to the first or second conducting layer by means of a conductive polymer adhesive; soldering an electrical component on the substrate; and attaching an electrical component to the first conducting layer by means of a conductive polymer adhesive.

However, Brandt teaches that plated polymer thick film inks have been used to

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create conductive and solderable electronic circuit traces as well as plated through-holes for component attachment in printed circuit boards (col. 1, lines 44-61).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Chen with soldering an electrical component on the substrate because plated polymer thick film inks have been used to create conductive and solderable electronic circuit traces as well as plated through-holes for component attachment in printed circuit boards as taught by Brandt (col. 1, lines 44-61).

As to attaching an electrical component to the first or second conducting layer by means of a conductive polymer adhesive and attaching an electrical component to the first conducting layer by means of a conductive polymer adhesive, it appears that conductive polymer adhesives are known in the art. It does not appear that Applicants have invented conductive polymer adhesives, and thus, substitution of solder with a conductive polymer adhesive would have been functionally equivalent because it has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See MPEP § 2144.06 and § 2144.07.

III. Claims **21 and 24-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kenney** (US Patent No. 3,949,121) as applied to claims 1-2, 20, 22-23 and 28 above, and further in view of **Seeger, Jr. et al.** (US Patent No. 4,579,970).

Kenney is as applied above and incorporated herein.

Kenney does not teach wherein the substrate is coated with a polymer adhesive; wherein the resin is a polymer having amide groups; wherein the thickness of the seeding layer is from 3 to 5 microns; wherein the thickness of the first electrically conducting layer is less than or equal to 4 microns; and wherein the thickness of the first electrically conducting layer is about 0.25 microns.

However, Seeger teaches that a thermosetting adhesive aids in bonding the ink to the organic resin or plastic substrate (col. 2, lines 19-28; col. 5, lines 10-44; and Fig. 4).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Kenney with wherein the substrate is coated with a polymer adhesive because this would have aided in bonding the ink to the organic resin or plastic substrate as taught by Seeger (col. 2, lines 19-28; col. 5, lines 10-44; and Fig. 4).

As to wherein the resin is a polymer having amide groups, Kenney teaches that the binder includes synthetic resins (col. 7, lines 1-17). It appears that a polyamide would have been suitable as the binder because polyamides are known binders in particle-filled printing inks as taught by Seeger, Jr. (col. 5, lines 56-70). It has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See MPEP § 2144.06 and § 2144.07.

Furthermore, the resin is a result-effective variable and one skilled in the art has the skill to determine the resin that would carry out the desired reaction, i.e., the binder should be identical to, or similar to, or compatible with the substrate upon solidification so that good adhesion is created between the substrate and the solid matrix of the polymer carrier, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to wherein the thickness of the seeding layer is from 3 to 5 microns; wherein the thickness of the first electrically conducting layer is less than or equal to 4 microns; and wherein the thickness of the first electrically conducting layer is about 0.25 microns, the seeding layer and the first electrically conducting layer of Kenney would have inherently had a thickness. Although not specifically disclosed by Kenney, it would have been well within the skill of the artisan to have determined the thickness of these layers because the thickness is a result-effective variable and one skilled in the art has the skill to calculate the thickness that would determine the success of the desired reaction to

occur, i.e., carrying the electric current, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

IV. Claims **19, 29 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kenney** (US Patent No. 3,949,121) as applied to claims 1-2, 20, 22-23 and 28 above, and further in view of **Brandt et al.** (US Patent No. 5,922,397).

Kenney is as applied above and incorporated herein.

Kenney does not teach attaching an electrical component to the first or second conducting layer by means of a conductive polymer adhesive; soldering an electrical component on the substrate; and attaching an electrical component to the first conducting layer by means of a conductive polymer adhesive.

However, Brandt teaches that plated polymer thick film inks have been used to create conductive and solderable electronic circuit traces as well as plated through-holes for component attachment in printed circuit boards (col. 1, lines 44-61).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Kenney with soldering an electrical component on the substrate because plated polymer thick film inks have been

used to create conductive and solderable electronic circuit traces as well as plated through-holes for component attachment in printed circuit boards as taught by Brandt (col. 1, lines 44-61).

As to attaching an electrical component to the first or second conducting layer by means of a conductive polymer adhesive and attaching an electrical component to the first conducting layer by means of a conductive polymer adhesive, it appear that conductive polymer adhesives are known in the art. It does not appear that Applicants have invented conductive polymer adhesives, and thus, substitution of solder with a conductive polymer adhesive would have been functionally equivalent because it has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See MPEP § 2144.06 and § 2144.07.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310

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for regular communications and (703) 873-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read "Edna Wong". The signature is stylized with a large, circular flourish at the end of the last name.

Edna Wong
Primary Examiner
Art Unit 1741

EW
October 10, 2002